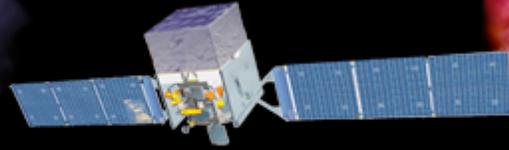


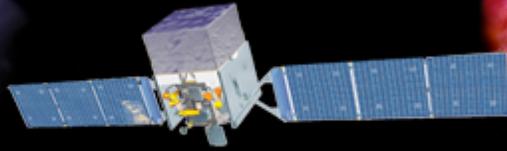
Fermi

Science Support Center



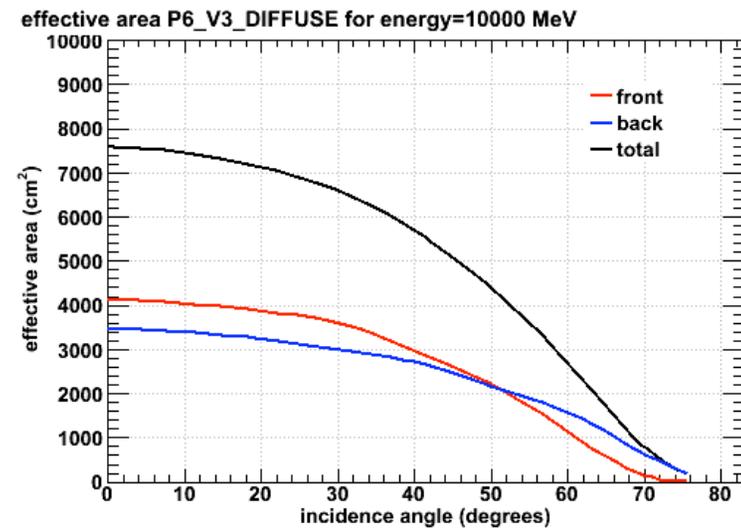
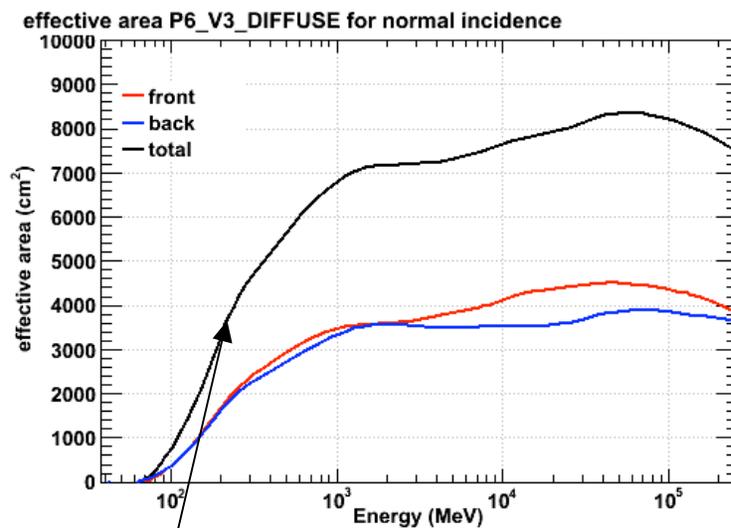
FSSC Science Tools

Data Selection and Caveats

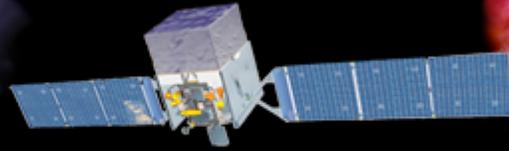


Event selection

- *Use Events >100 MeV for spectral analysis*
 - *To avoid spurious features due to rapidly changing effective area with energy and because of residual uncertainty in the instrument response.*

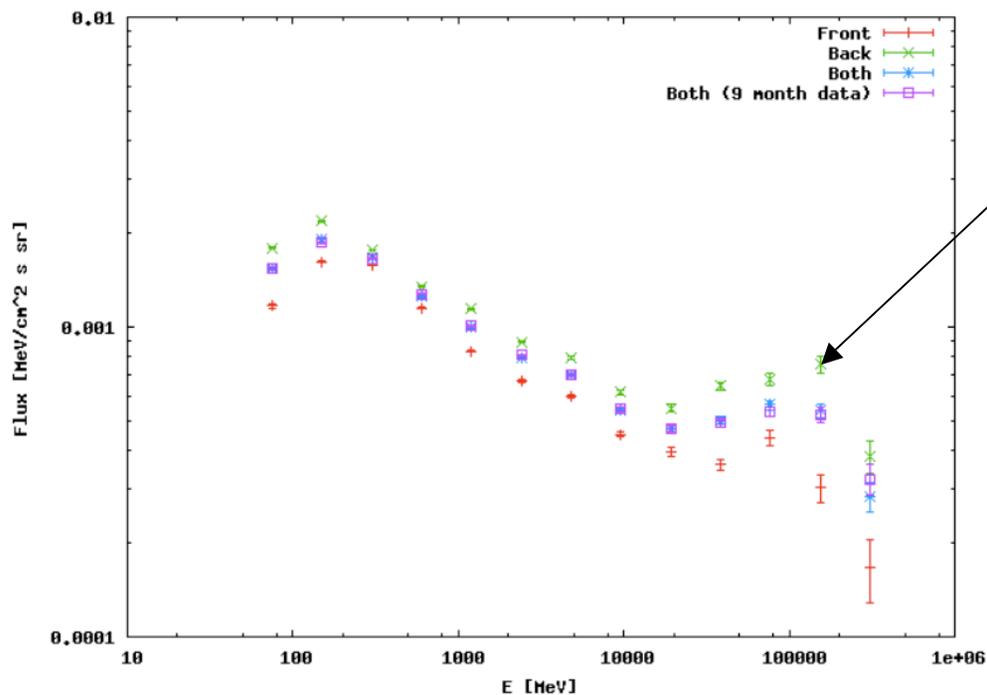


Small uncertainty in energy scale results in relatively large systematic error in final result.



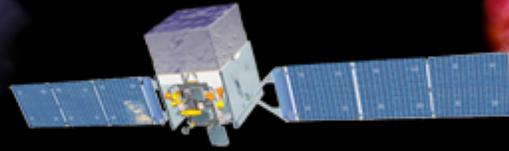
Event selection

- Use "Diffuse" class for diffuse, extended, and point source analysis. ($evclsmin=3$, $evclsmax=3$). **NOTE - this applies to P6 IRFs only, future recommended event selections might change.**
 - Other event classes have higher charged-particle background contamination and may result in spurious spectral features.

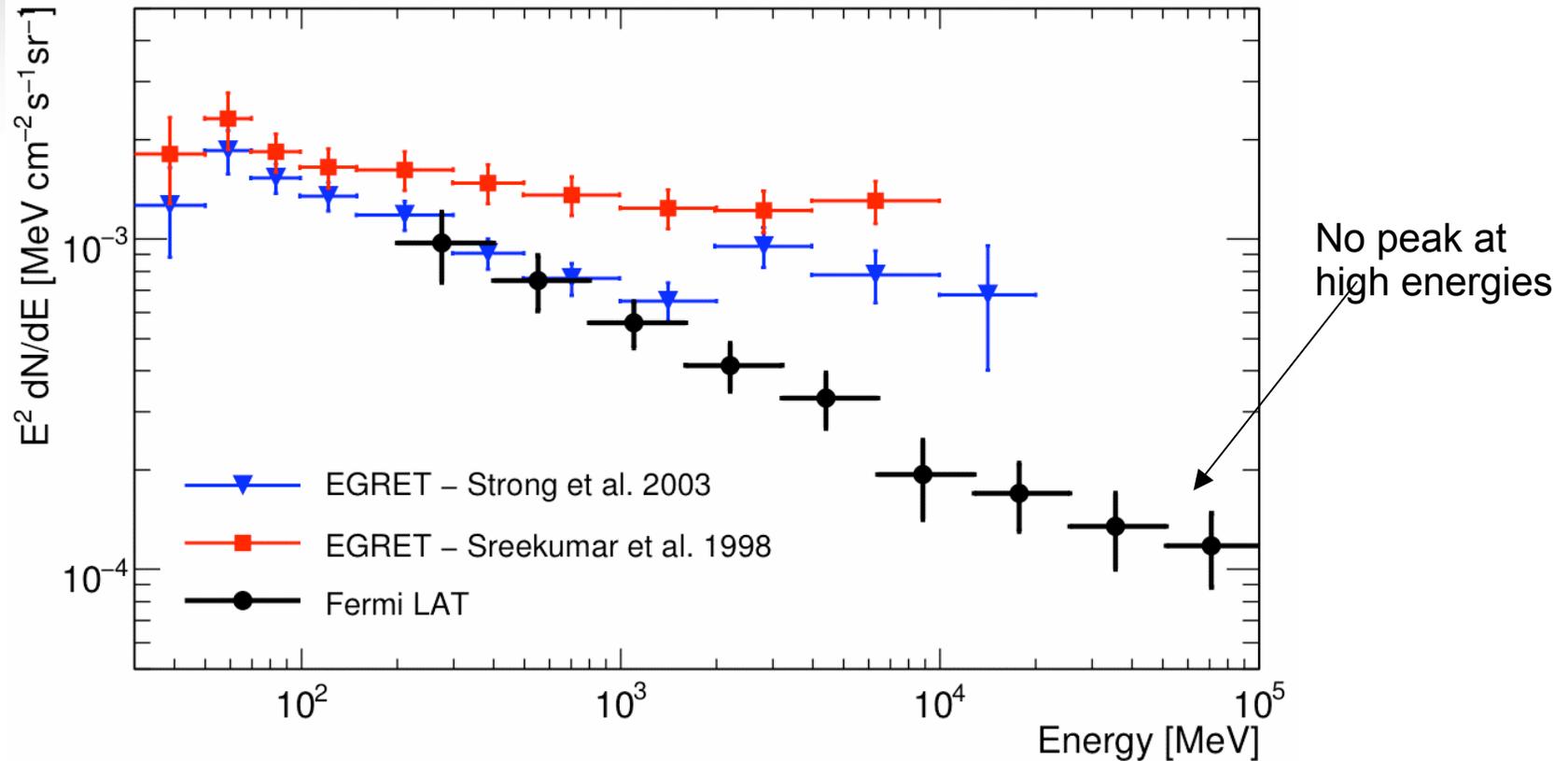


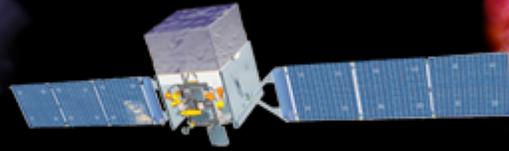
Residual cosmic-ray
(charged particle)
background.

Spectral templates are provided for the **diffuse class** event selection that allow you to account for the presence of residual cosmic-ray backgrounds in your model fits.



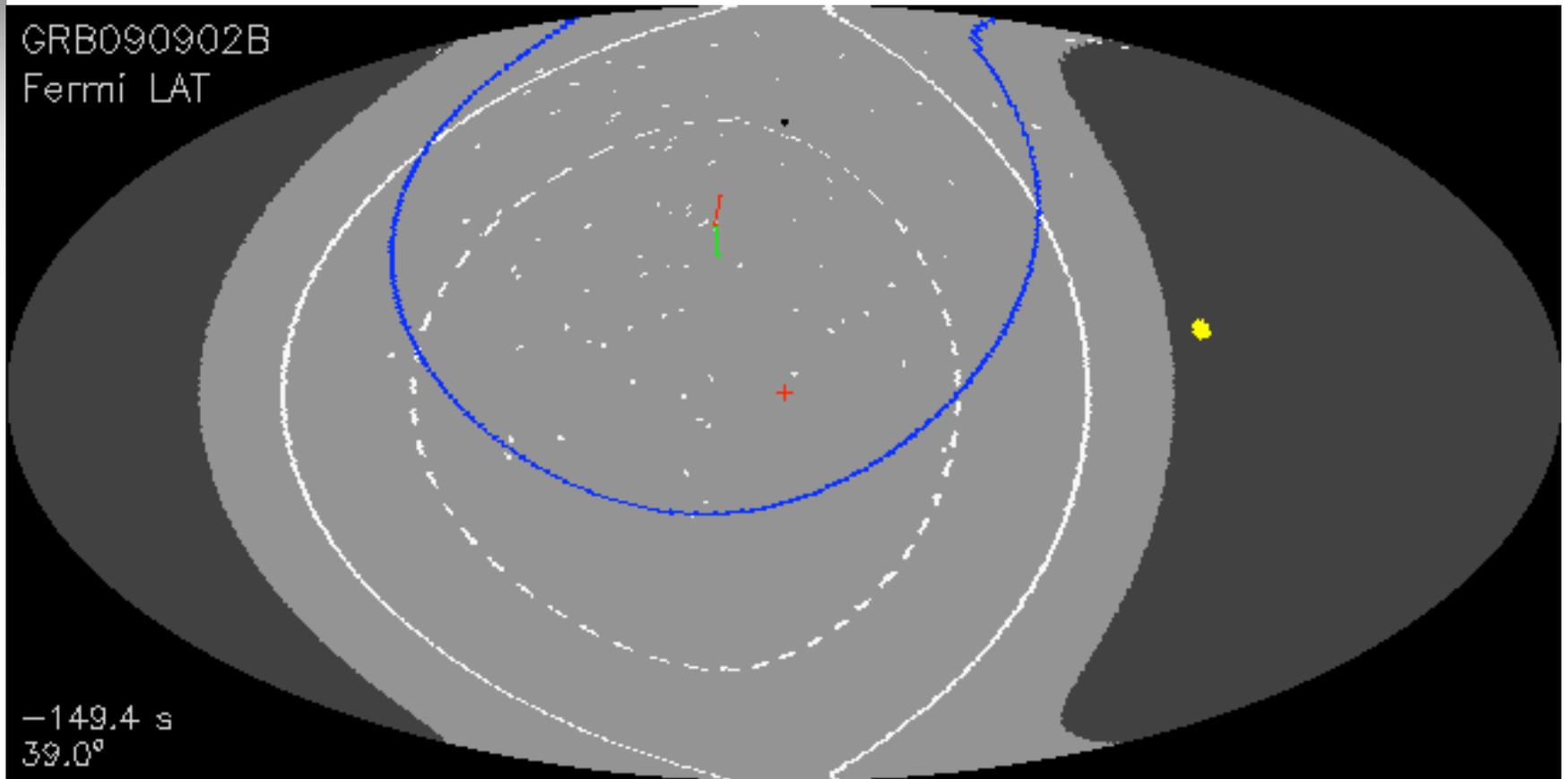
Isotropic gamma-ray spectrum (for comparison)



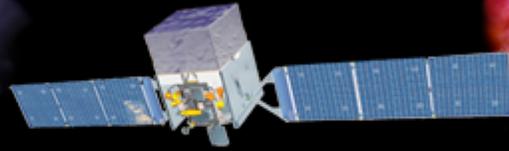


The Earth is Bright!

GRB090902B
Fermi LAT



Exclude all periods where the edge of your region of interest comes within 8 deg of the Earth's limb (zenith angle of 105 deg)



Caveats Documentation

The screenshot shows a web browser window with the URL `http://fermi.gsfc.nasa.gov/ssc/data/analysis/LAT_caveats.html`. The page header includes the NASA logo and 'GODDARD SPACE FLIGHT CENTER'. A search bar is present with the text 'SEARCH Fermi:'. The main navigation bar has links for HOME, RESOURCES, PROPOSALS, DATA (highlighted), HEASARC, HELP, and SITE MAP. The left sidebar contains a 'Data' section with links for Data Policy, Data Access, and Data Analysis. Under 'Data Analysis', the 'Caveats' link is highlighted with an orange arrow. The main content area is titled 'Caveats About Analyzing LAT Data' and contains the following text:

Caveats for the LAT are included for the following topics:

- [Event Selection](#)
- [Systematic effects and uncertainties](#)
- [Diffuse Model](#)
- [GRB analysis](#)
- [LAT Monitored Source List](#)

Event Selection

Prescriptions for event selection for analysis of Fermi-LAT data are provided in the [data preparation](#) section of the Cicerone.

The Fermi-LAT performance associated to the released Pass6_V3 Instrument Response Functions (IRF) are documented on the [LAT Performance Page](#). These IRFs were derived using MonteCarlo generated samples of photons between 18 MeV and 562 GeV. However, the validity of these IRFs when performing analysis of LAT data, in terms of usable event classes and energy range, is determined by the caveats discussed below.

- Use "Diffuse" class for diffuse, extended, and point source analysis. Other event classes have higher charged-particle background contamination and may result in spurious spectral features.
- Data below 100 MeV can **not** be used for spectral analysis because of the rapidly changing effective area with energy and because of residual uncertainty in the instrument response. Inclusion of these data will result in the creation of spurious spectral features under the